User Manual

FRM220A

Hardware Installation

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FRM220A Hardware Installation Manual

Fiber In-band Managed
Media Platform Rack, 20 Slot, 2U with GbE Aggregate Switch

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CE

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Chapter 1 Introduction

1.0 Introduction

Thank you for choosing ***FRM220A*** Platform Fiber Media Converter Rack. If you would like to skip right to the installation of the Converter Chassis, proceed to Chapters 2.

This manual is used to explain the hardware installation procedures for ***FRM220A***, and present its capabilities and specifications. This manual is divided into 2 Sections, the Introduction and Installation, plus the Appendix. The Appendix includes further information on options for placing the device in service.

Installers should carefully read the Chapter 2, Installation and the Cabling Specification Appendix. The companion document, the **FRM220A GSW/SNMP Configuration Manual**, is available in electronic format only. The divisions in that manual are intended for use by personnel to answer questions in general areas. Planners and potential purchasers may read the Introduction to determine the suitability of the product to its intended use; Operating Personnel would use the Operations and Web Based Management Chapters and Appendices to become familiar with the line cards and settings. Network Administrators should read the chapters on Operation, Web Based Management and Trouble Shooting to become familiar with the diagnostic capabilities, network settings and management strategies for the SNMP managed chassis.

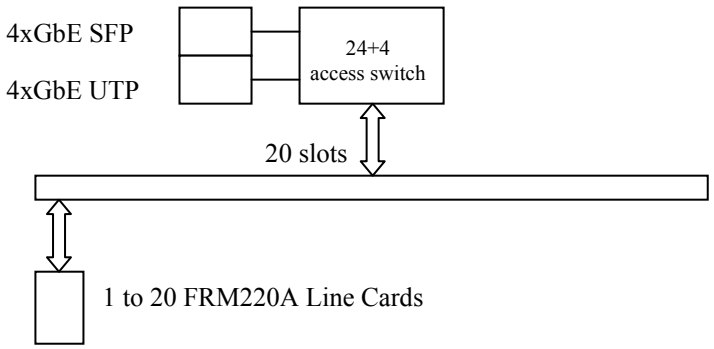
1.1 Functional Description

FRM220A-CH20 is a 2U high 19" Rack, 20 slot modular media converter center with an integral 24+4 Gigabit Ethernet aggregate L2 switch backplane. ***FRM220A*** provides a modular solution for FTTx by combining L2 switching and media conversion in one manageable platform. All critical components, Power, fans, management module, L2 switch and interface cards are hot swappable allowing online field replacement. An additional feature allows ***FRM220A*** to detect the working or failing status either of power module or any fan assembly in the unit and activate relays that can be used to control external alarm devices.

There are 20 slots available for installation of ***FRM220A*** Converter Cards in the ***FRM220A*** rack. The L2 Gigabit Switch/SNMP Card is installed through the rear of the CH20 chassis. Each of 20 slots may connect to the integral Gigabit switch through individual 10/100/1000 interfaces to the backplane. Each **FRM** Card may be an independent fiber to copper converter or can connect to the aggregate switching backplane. When linked at the far end to a compatible FRM stand-alone or "I" series FMC (Fiber Media Converter) stand-alone converter, complete in-band management is supported. All settings of the line card and remote connected stand-alone device may be managed through any of the available management interfaces. A variety of cards are or will be available that support multi-mode or single-mode fiber types and connections to SC, ST, FC or even the latest bi-directional single fiber WDM (Wave Division Multiplexing) in ranges from 2Km to 120Km. Converter cards will include Fast Ethernet, Gigabit Ethernet, Inverse Multiplexer cards in 1, 5, 8, or 16E1 and more as the product matures.

FRM220A incorporates redundant power modules, when two supplies are installed The supplies, depending on the model, derive power from either an AC power source (100 ~ 240VAC) and/or DC power source. Two available DC power modules provide either 18-36VDC or 36-72VDC range. When two modules are installed, they provide for power redundancy and are hot swappable even during ***FRM220A*** Line Cards' transmissions. ***FRM220A*** provides all copper interface connections on the face of each Line Card. The fiber interface connectors are also located on the individual Line Card's face, along with status indicator LEDs. The status LED indicators provide for quick indications of both copper and fiber link statuses and fault detection.

The ***FRM220A-CH20*** incorporates a Layer 2 Gigabit Ethernet access switch that provides 1GbE to each of the 20 card slots for Ethernet Aggregation.



FRM220A Simple Block Diagram

1.2 Chassis Front Description

The front of ***FRM220A*** contains the line card slots. They are numbered 1 through 20, from left to right as viewed from the front. The typical configuration is with one GSW/SNMP (**Network Management Controller**) card in rear slot and in-band manageable line cards in any front slot numbered 1 through 20.

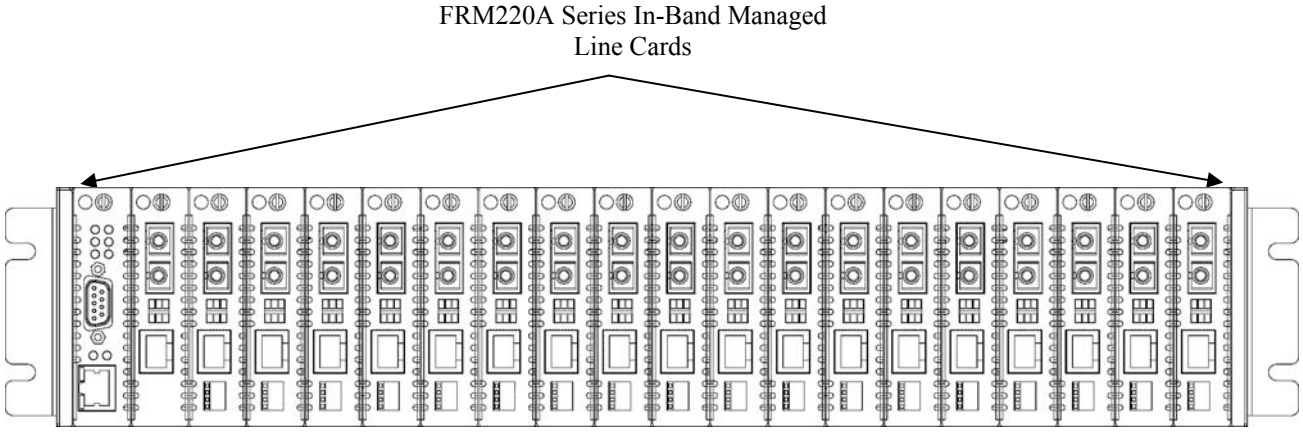


Figure 1-1 Chassis Front View

1.3 Chassis Rear Description

The rear panel holds the aggregate switch card, the hot-swappable cooling fan modules, and the hot-swappable power modules. The pluggable modules do not require any tools for removal and replacement.

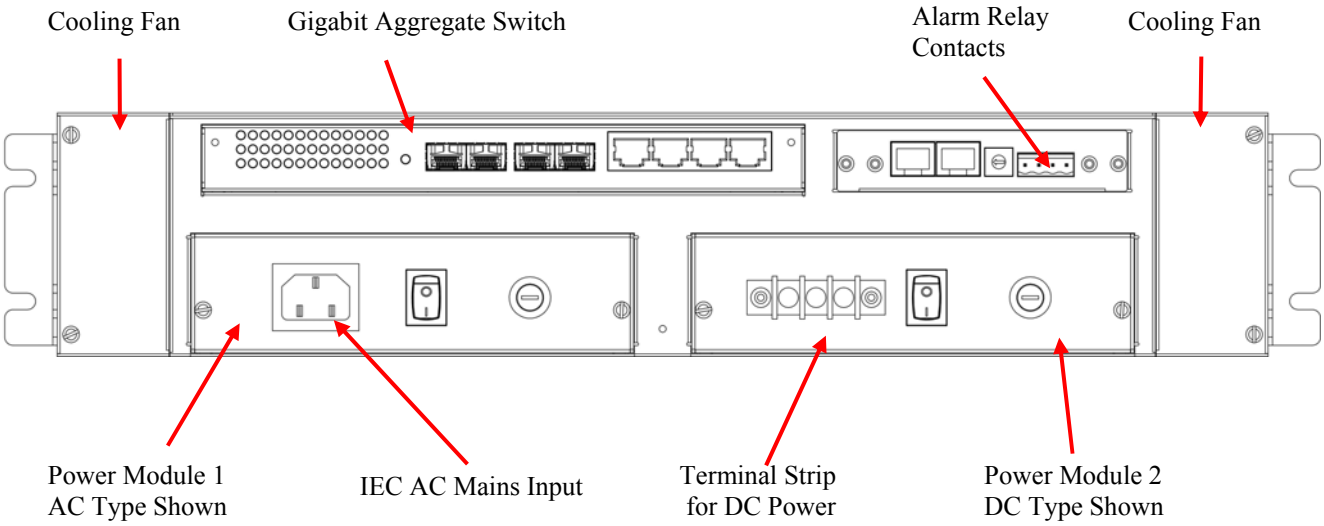


Figure 1-2 Chassis Rear View

1.4 Chassis Physical Dimensions

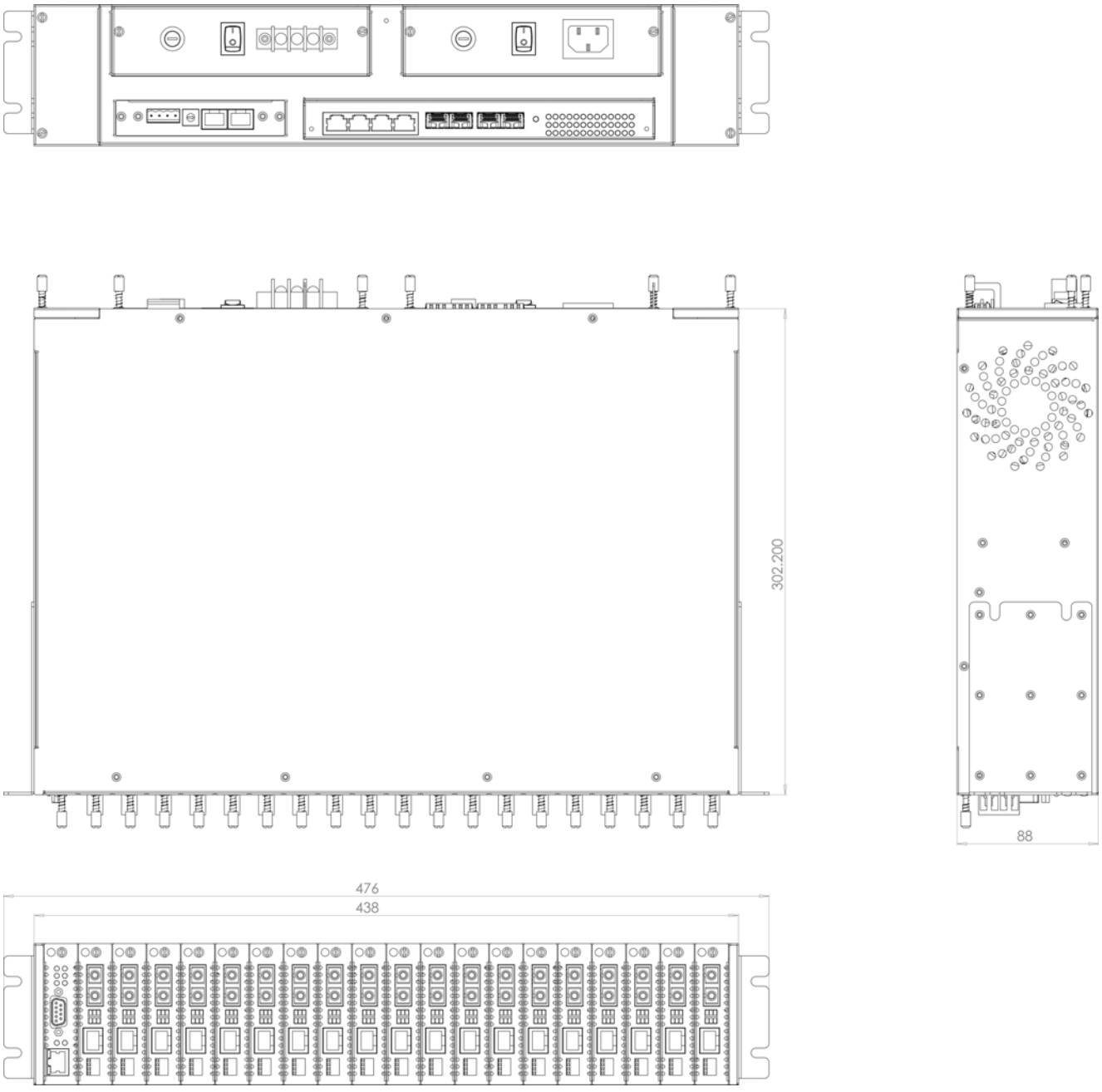


Figure 1-3 Chassis Dimensions, in millimeters

1.5 Chassis Specifications

Environment

Temperature -10 - 50°C (14-122°F)
Humidity 5-95% non condensing

Alarm relay contact ratings

125VAC 1A
110VDC 0.6A
30VDC 4A

Power Module Specifications

AC Power Module

Input : Universal, 100~240VAC ±10% at ambient temperature; Frequency : 47~63 Hz
Output :DC 12V, 200W maximum rating (Green power rated, 89% power efficiency)

DC Power Module

Input : -36~75 VDC (option 1)
Input : -18~-36VDC (option 2)
Output :DC 12V, 200W maximum rating

Power Consumption

~120 watts (fully loaded chassis, with random mix of line card types)

Heat Generation

~280 BTU (fully loaded chassis, with random mix of line card types)

Compliance

European Union : EN55022:2006, Class A, EN55024:1998+A1:2001+A2:2003, and EN60950-1:2001
FCC : part 15, subpart B, class A

Reliability

MTTB : >65,000 hours (25°C)

Physical Specifications

Dimensions : 438mm (Width) x 302mm (Depth) x 88mm (Height)
(US: 17 1/4" wide x 11 7/8" deep x 3 1/2" high)
Weight : 4.5Kg (US: ~10 lbs)

AC module weight : 690g (US 1.5 lbs)
DC module weight : 505g (US 1.2 lbs)
Fan module weight : 200g (US 0.5 lbs)
GSW/SNMP card weight : 200g (US 0.25 lbs)

Net Weight : 7.0kgs (US 15 lbs 8 oz)
(with 1 GSW/SNMP, 2 fan modules, 1 AC +1 DC power module & two bracket panels for 19" rack-mounting)

Fully Populated Reference Net Weight: 8.7Kg (US 19.2 lbs.)
(fully loaded, two powers, GSW/SNMP and 20 pcs 5E/ET100 line cards)

1.6 GSW/SNMP (Aggregate Switch)

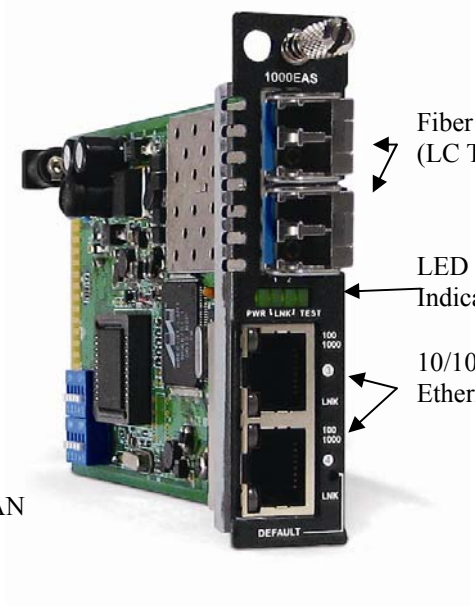
FRM220A must be ordered with an aggregate Card. The card is placed in the rear of the chassis and provides backplane connection to each card slot. Management is accomplished either via Ethernet and any standard SNMP network management software that supports MIB-II. The WEB GUI based interface provides an easy method for the user to operate and monitor the whole system. Almost all FRM line cards support remote in-band configuration when paired with the same type ***FRM220A*** stand-alone in-band converter.

1.7 FRM220-1000EAS/X 802.3ah In-band managed Gigabit Fiber Media Converter

This IEEE802.3ah OAM compliant copper to fiber Gigabit Ethernet solution is designed to make conversion between 10/100/1000Base-TX and 1000Base-SX/LX with SFP-LC connector. With SNMP agent and GUI Web-based management in ***FRM220A***, the Network administrator can monitor, configure and control the activity of each 802.3ah series line card. This 802.3ah OAM Compliant media converter, with its Q-in-Q and maximum interoperability will enable carriers and service provider to have a clear vision of their network and conveniently manage their demarcation point.

Features

- 802.3ah In-band OAM management compliant
- 2 ports 10/100/1000Base-T and 2 ports GbE fiber (SFP)
- Supports Flow control function
- Supports OAM remote loopback
- Supports rapid spanning tree function
- Supports bandwidth control
- Link Fault Pass-thru
- Transparent Link Loss Forwarding
- Supports Dying Gasp Reporting for power outage
- Supports local / remote monitor
- Supports local / remote Configuration
- Supports Q in Q double tagged frame transparent
- Supports Ethernet frame sizes up to 9K bytes
- Supports remote F/W upgrade (In-band)
- Supports IEEE 802.1q Tag VLAN pass thru and port-base VLAN
- Provides fiber transceiver information for management
- Compatible with FRM220A Managed Chassis



1000EAS is a stand-alone manageable 4 port Gigabit Ethernet fiber switch, utilizing SFP for 1000Base-SX/LX fiber connection and two 10/100/1000 Ethernet electrical ports.

LAN Interface Specification

Two RJ-45 female connectors for straight or cross-over connection.
Supports 2-port 10/100/1000Base, n-way (Auto-Negotiation).
Supports Full, Half duplex, 10/100/1000 speed force mode selections.
Transmission Packet Rate for 10Base-T: 14880 per second
100Base-TX: 148800 per second ; 1000Base-T: 1488000 per second
Copper TP cable 4 pair Cat. 5e or 6 UTP

Optical Interface Specification

Transceiver Connector type：SFP-LC

Supports 2-port, 1000Mbps SFP slot
Supports auto-receive sensitivity function, no extra attenuators needed.

General Specification

Standards IEEE 802.3 10Base-T,
IEEE 802.3u 100Base-TX , 100Base-FX,
IEEE 802.3ab, 802.3z 1000Base-T, 1000Base-SX/LX
IEEE 802.3ah In-band OAM management compliant
6 diagnostic LEDs : Power / FX-Link ,TX-Speed / TX-Duplex/ TX-Link / Test (loopback)
Temperature: -10 - 60° C (Operating);-20 - 70° C (Storage).
Humidity: 0-95% non-condensing (Operating); 10-90% (Storage).
Power: DC Jack : Switching adaptor (12V, 1A)
Consumption: < 12W
Dimensions: 155mm x 88mm x 23mm (LxWxH).
Weight: 140g.
Compliance: FCC part 15, Subpart B, Class A,
ANSI C63.4:2003
CE EN55022:2006, Class A
EN55024:1998+A1:2001+A2:2003
LVD: EN60950-1:2001
MTBF: 65,000 h (25°C)

This product includes the following models:

- 1000EAS/X (2 electrical plus 2 SFP)

1.8 FRM220A-E1/ET100 E1 Inverse Multiplexer (Ethernet over E1)

The FRM220A-E1/ET100, 5E1/ET100, 8E1/ET100 and 16E1/ET100 are 1, 5, 8, or 16 E1 inverse multiplexer cards capable of bundling up to 16 E1 lines for cost-effective connection of 10/100BaseTX or 100Base-FX LANs over multiple E1 transports. The FRM220A-16E1/ET100 inverse multiplexer transmits up to a 31.74Mbps Ethernet bridge channel (GFP-F encapsulated) over 16 E1 links. The FRM220A-16E1/ET100 bridges the gap between E1 and E3, allowing bridges to operate at faster rates. It also provides high speed access to SDH/SONET backbones where the only access services available are E1 lines. The FRM220A-16E1/ET100 supports an E1 attenuation of up to 43 dB on twisted pair or coax cable. This provides an approximate operating range up to 2km (using 22AWG). The FRM220A-16E1/ET100 fully meets E1 specifications including ITU-T G.703 and G.823. The FRM220A-16E1/ET100 features diagnostic capabilities for performing remote loopback. The operator at either end of the line may test both the FRM220A-16E1/ET100 and the line in the digital loopback mode. The Ethernet copper interface supports auto-negotiation and auto MDI/MDIX, allowing plug-and-play Ethernet connection without any additional configuration.

Features

- Connects one Fast Ethernet over up to16E1 links (1.984Mbps to 31.74Mbps)
- Built-in GFP-F bridge operates at WAN rate
- Auto-Negotiation
- Maximum 220ms delay variance tolerable between E1 links
- Unbalanced E1/BNC or balanced E1/RJ45
- Fully compatible with FRM220A-CH20 chassis
  Supports backplane or front panel connection of Ethernet
- SNMP management with FRM220A-GSW/SNMP
- LED Alarm indication

Specifications

Ports

E1	Framing	CCS+CRC4
	Standards	ITU-T G.703/ G.704/ G.732/ G.823 Recommendations
	Bit Rate	2.048Mbps ±50ppm (1, 5, 8, or 16E1)
	Line Code	HDB3
	Clock Set	Internal Oscillator or Recovery clock
	Rx Level	-43dBm sensitivity (XLH)
	Impedance	RJ45 E1-120ohm, BNC E1-75ohm
	Jitter Spec	ITU-T G.823 recommendations
	Pulse Mask	G.703 Recommendations
	Pulse Amplitude	2.37V ±10% Nominal
	Delay Variance	up to 220ms between E1 paths in bundle
	Diagnostics	Remote Digital Loopback
Ethernet		
	Standards	802.3, 802.3u
	Interface	10/100Base-TX, Half/Full Duplex
	Cable type	Cat5, 5e, 6
	SFP type	LC 100Base-FX
	Cable type	Multi-mode (62.2/125um), Single mode (9/125um)
LEDs		Power, Alarm, E1 Signal loss, E1 Alarm (AIS, LOF, RAI, LOMF)
		LAN Lnk/Act, 10/100M, SD (100Base-FX)
Power		DC In 12V
Consumption		< 12W
Dimensions		155 x 88 x 23mm (D x W x H)mm
Weight		120g
Temperature		-10~60°C (Operating) ,-20~70°C (Storage)
Humidity		10~95% non-condensing
Certification		CE, FCC, LVD, RoHS
MTBF		65,000 h (25°C)

This product includes the following models:

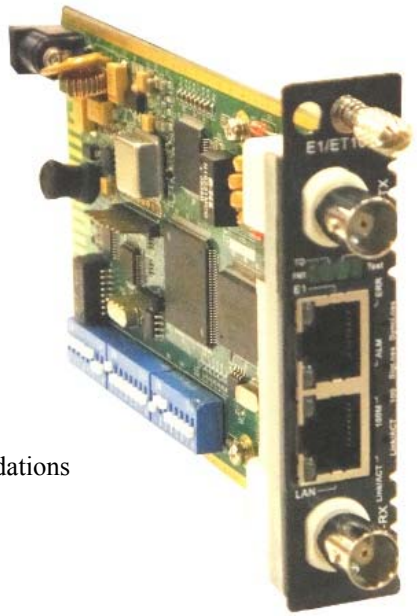
- FRM220A-E1/ET100T (Single E1 Ethernet Bridge RJ-45), FRM220A-E1/ET100S (Single E1 Ethernet Bridge SFP)
- FRM220A-5E1/ET100T (5xE1 Inverse Multiplexer RJ-45), FRM220A-5E1/ET100S (5xE1 Inverse Multiplexer SFP)
- FRM220A-8E1/ET100T (8xE1 Inverse Multiplexer RJ-45), FRM220A-8E1/ET100S (8xE1 Inverse Multiplexer SFP)
- FRM220A-16E1/ET100T (16xE1 Inverse Multiplexer RJ-45), FRM220A-16E1/ET100S (16xE1 Inverse Multiplexer SFP)

1.9 FRM220A-EoE1 Ethernet Bridge (Ethernet over E1)

The FRM220A-EoE1 is a single E1 Ethernet bridge card capable of carrying 10/100BaseTX or 100Base-FX LANs over single E1 transports. The FRM220A-EoE1 transmits up to a 1.8Mbps Ethernet bridge channel (HDLC encapsulated) over 1 E1 link. The FRM220A-EoE1 supports an E1 attenuation of up to 43 dB on twisted pair or coax cable. This provides an approximate operating range up to 2km (using 22AWG). The FRM220A-EoE1 fully meets E1 specifications including ITU-T G.703 and G.823. The FRM220A- EoE1 features diagnostic capabilities for performing remote loopback. The operator at either end of the line may test both the FRM220A- EoE1 and the line in the digital loopback mode. The Ethernet copper interface supports auto-negotiation and auto MDI/MDIX, allowing plug-and-play Ethernet connection without any additional configuration.

Features

- Connects one Fast Ethernet over 1 E1 link
- Built-in HDLC bridge operates at WAN rate
- Unframed or Fractional E1 supported
- LAN port with Auto-Negotiation
- Unbalanced E1/BNC or balanced E1/RJ45
- Fully compatible with FRM220A-CH20 chassis
  Supports backplane or front panel connection of Ethernet
- SNMP management with FRM220A-GSW/SNMP
- LED Alarm indication



Specifications

Ports

E1	Framing	Unframed or CCS
	Standards	ITU-T G.703/ G.704/ G.732/ G.823 Recommendations
	Bit Rate	2.048Mbps ±50ppm (internal Osc)
	Line Code	HDB3
	Clock Set	Internal Oscillator or Recovery clock
	Rx Level	-43dBm sensitivity (XLH)
	Impedance	RJ45 E1-120ohm, BNC E1-75ohm
	Jitter Spec	ITU-T G.823 recommendations
	Pulse Mask	G.703 Recommendations
	Pulse Amplitude	2.37V ±10% Nominal@75Ω
		3.00V ±10% Nominal@120Ω
	Diagnostics	Remote Digital Loopback
Ethernet		
	Standards	802.3, 802.3u
	Interface	10/100Base-TX, Half/Full Duplex
	Cable type	Cat5, 5e, 6
	SFP type	LC 100Base-FX
	Cable type	Multi-mode (62.2/125um), Single mode (9/125um)
LEDs		Power, Alarm, E1 Signal loss, E1 Alarm (AIS, LOF, RAI, LOMF)
		LAN Lnk/Act, 10/100M, SD (100Base-FX)
Power		DC In 12V
Consumption		< 8W
Dimensions		155 x 88 x 23mm (D x W x H)mm
Weight		120g
Temperature		-10~60°C (Operating) ,-20~70°C (Storage)
Humidity		10~95% non-condensing
Certification		CE, FCC, LVD, RoHS
MTBF		65,000 h (25°C)

This product includes the following models:

- FRM220A-EoE1T (Single E1 Ethernet Bridge RJ-45)
- FRM220A-EoE1S (Single E1 Ethernet Bridge SFP)

1.10 FRM220A-E1/Data Fractional E1 DSU/CSU Card

The FRM220A-E1/DATA slide in card DSU/CSU is a digital access unit for Unframed or Fractional E1 services. The FRM220A-E1/DATA data channel supports user-selectable transmission rates via randomly selected E1 timeslots, which provides integral multiples of 64kbps or 56kbps, up to a maximum 2.048Mbps (unframed), for a line attenuation of up to 43 dB on twisted pair or coax cable. This provides an approximate operating range up to 2km (using 22AWG). The FRM220A-E1/DATA front panel provides status LEDs for monitoring the CSU and DSU conditions for initiating local and remote loopback with integral BERT. The FRM220A-E1/DATA features a Data cable adapter for connection to industry standard routers. When the FRM220A-E1/DATA card is placed in the FRM220A rack with SNMP management, in-band management allows viewing the card and remote converter's status, type, version, link status, data link status and alarms. Both card and remote can be configured to enable or disable the port, reset the port, set the data rate, modify the clock mode and initiate local or far end loop back test.

Features

- Supports Fractional E1 and Unframed E1 services with V.35/X21/RS530 adapter cable
- I/O connectors all located on front panel
- Multiple clock source selection and remote loopback (Internal or External: E1 recovery, DTE or DCE)
- Built-in BERT with V.54 diagnostic capabilities for performing local
- Unbalanced E1/BNC or balanced E1/RJ45
- Fully compatible with FRM220A-CH20 chassis
- SNMP management with FRM220A-CH20 chassis
- LED Alarm indication

Specifications

Ports

E1	Framing	Framed/Unframed
	Standards	ITU-T G.703/ G.704/ G.732/ G.823 Recommendations
	Bit Rate	2.048Mbps ±50ppm
	Line Code	HDB3
	Clock Set	Internal Oscillator or Recovery clock
	Rx Level	-43dBm sensitivity (XLH)
	Impedance	RJ45 E1-120ohm, BNC E1-75ohm
	Jitter Spec	ITU-T G.823 recommendations
	Pulse Mask	G.703 Recommendations
	Pulse Amplitude	2.37V ±10% Nominal (75 Ohm), 3.00V ±10% Nominal (120 Ohm)
	Delay Variance	8ms
	Diagnostics	Remote Digital Loopback
Data		
	Standards	ITU-T and EIA for V.35, RS530/449, X.21
	Connector	HDB26F with adapter cable for Data
LEDs		Power, TD, RD, RTS, DCD, TC Clock loss
		E1 Signal loss, Sync loss, Alarm (AIS, LOF, RAI), Test, Error
Power		DC In 12V
Consumption		< 12W
Dimensions		155 x 88 x 23mm (D x W x H)mm
Weight		120g
Temperature		-10~60°C (Operating) ,-20~70°C (Storage)
Humidity		10~95% non-condensing
Certification		CE, FCC, LVD, RoHS
MTBF		65,000 h (25°C)

This product includes the following models:

- FRM220A-E1/Data-R (Single Fractional E1 DSU/CSU card with RJ-45 for E1)
- FRM220A-E1/Data-B (Single Fractional E1 DSU/CSU card with BNC for E1)

Note: This card does not support any Ethernet connection to FRM220A back plane.

Chapter 2 Installation

2.1 Introduction

The Installation chapter will cover the physical installation of ***FRM220A***, Rack Mount In-Band Managed Series Fiber Converter Platform Chassis, the electrical connections, interface connections and cabling requirements. A brief overview of the functional components such as main unit and management options will also be outlined in this chapter.

Required Tools

You will need these tools to install ***FRM220A***:

Number 2 Phillips screwdriver for the 3mm and the 12-24 rack installation screws.

Wrist strap or other personal grounding device to prevent ESD occurrences.

Antistatic mat or antistatic foam to set the equipment on.

2.2 Site Preparation

Install ***FRM220A*** within reach of an easily accessible grounded AC outlet or three wire (-48VDC, Power return, Earth Ground) central office power. The AC outlet should be capable of furnishing 90 to 250 VAC. Refer to 2.4 Electrical Installation. Allow at least 10cm (4 inch) clearance at the front of ***FRM220A*** for the Fiber and other copper cables.

2.3 Mechanical Assembly

FRM220A is designed for rack mount installation and will require 2U space in a standard EIA 19" or 23" rack. ***FRM220A*** has two removable fan units that install in the rear side of the chassis. Without fans, excessive temperatures within the unit might cause it to electrically shutdown. ***FRM220A*** chassis is delivered completely assembled, however power modules and converter cards may or may not be installed in the chassis upon delivery. The rack mount adapters may be placed along the front or centrally located on the chassis. The same brackets also allow installation into a 23" rack and in this configuration, central mounting is recommended.

2.3.1 Rack mounting

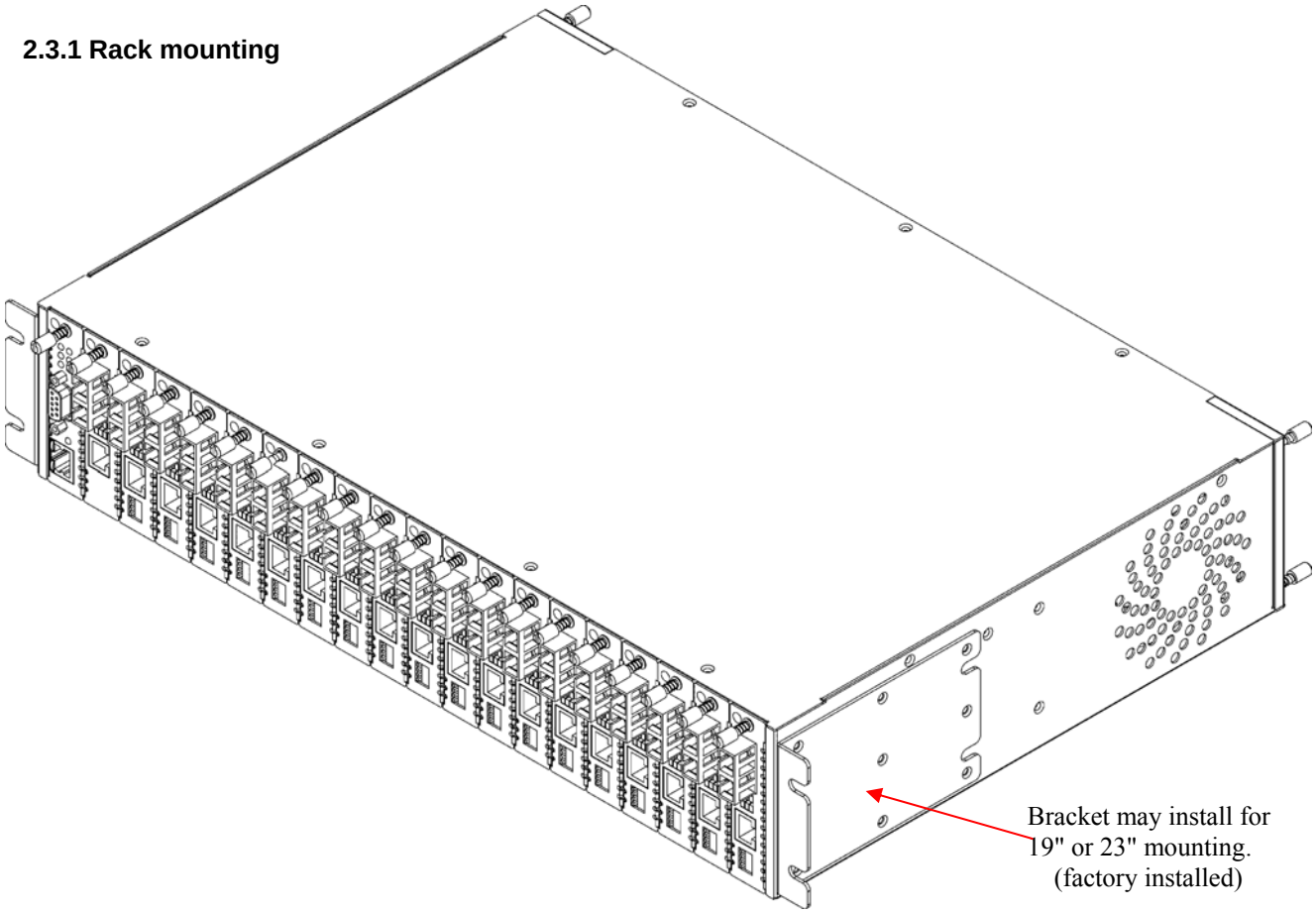


Figure 2-1 Standard 19" Rack-Mount Installation of ***FRM220A*** Unit requires 2RU space

2.3.2 Fan Units Removal/Replacement

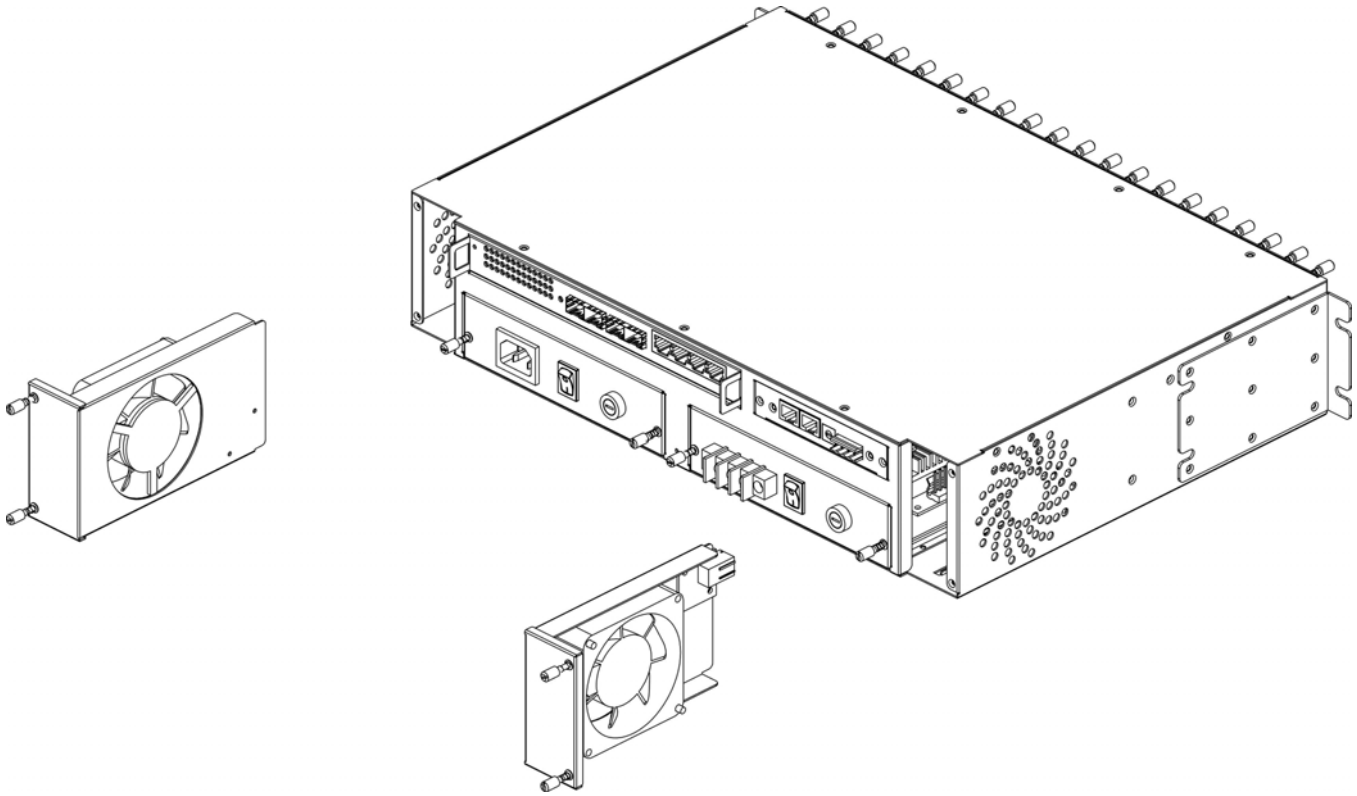
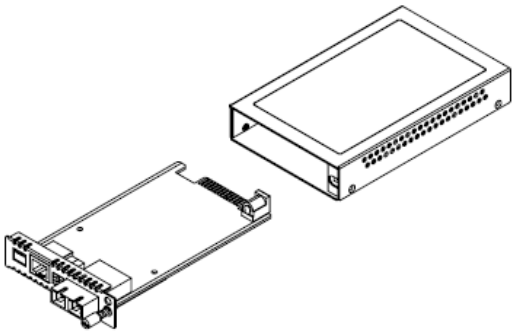


Figure 2-2 Removal/Replacement of ***FRM220A*** Fan Units

2.3.3 Line Card Conversion, Stand-alone/Rack

FRM220A Media Converter Line Card may be mounted in ***FRM220A-CH20*** chassis or serve as a stand-alone units. When installing in ***FRM220-CH01*** single slot chassis, the outer cover holds the line card. The unit then serves as a stand-alone media converter that can be linked to a line card in ***FRM220A-CH20*** chassis.



FRM220-CH01, single slot chassis
Requires external AC to DC 12V switching adapter.

FRM220-CH01-AC(DC), single slot chassis with built-in AC, DC or 2AC, 2DC, AC+DC power. (five models)

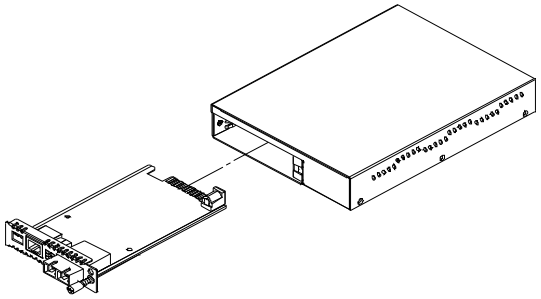


Figure 2-3 Converting ***FRM220A*** line card for stand-alone use

2.4 Electrical Installation

With an AC power module, AC power is supplied to ***FRM220A*** through a standard IEC C14 3-prong receptacle, located on the rear of the module. Any national power cord with IEC C13 line plug may be used to connect AC power to the power module. With a DC module, DC -48V is connected to the terminal block located on the rear of the module, observing the proper polarity. ***FRM220A*** should always be grounded through the protective earth lead of the power cable in AC installations, or via the frame ground connection for DC installations.

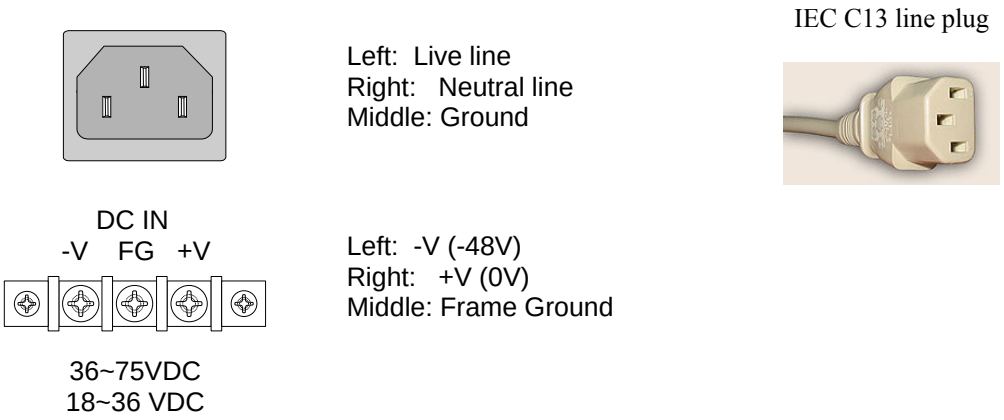


Figure 2-4 IEC (AC) & terminal block (DC) power connector pin assignment

2.5 Alarm Installation

The alarm relay provides one set of Power Failure contacts (normally open) and another set of FAN Failure contacts (normally open) contacts for monitoring the power and fans condition of the ***FRM220A***. The alarm contacts may also be programmed through the management interface to react to different fault conditions.

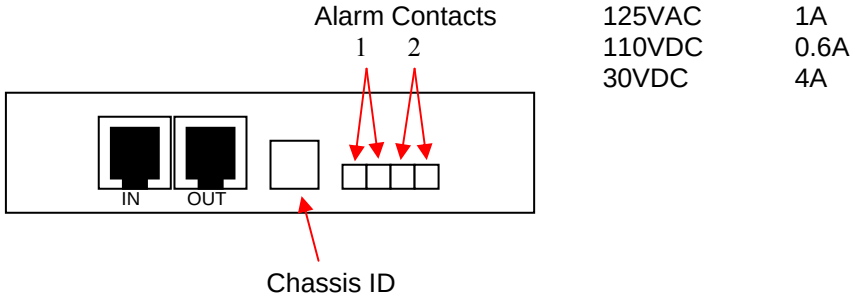


Figure 2-5 Alarm Relay Contacts and Cascade Ports

Note: FRM220A does NOT support cascade function.

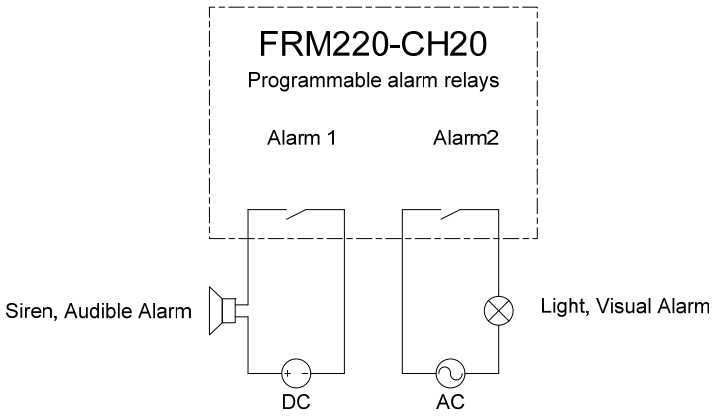


Figure 2-6 Example of electrical circuit for visual and audible alarms

2.6 Power Modules Removal/Replacement

The Power Supply Modules in ***FRM220A*** are available in three versions, one AC and two DC types. The universal AC version supports input voltages of 100 to 240 volts at frequencies of 47 to 63 Hertz. The DC version supports either a standard 36 to 75VDC or an optional 18 to 36VDC input voltage. Only one power supply module is required to power a completely full rack. When two Power Supply Modules are installed, the supplies are hot swappable and redundant, meaning any one supply may be removed and replaced without impacting the operation of ***FRM220A*** Rack.

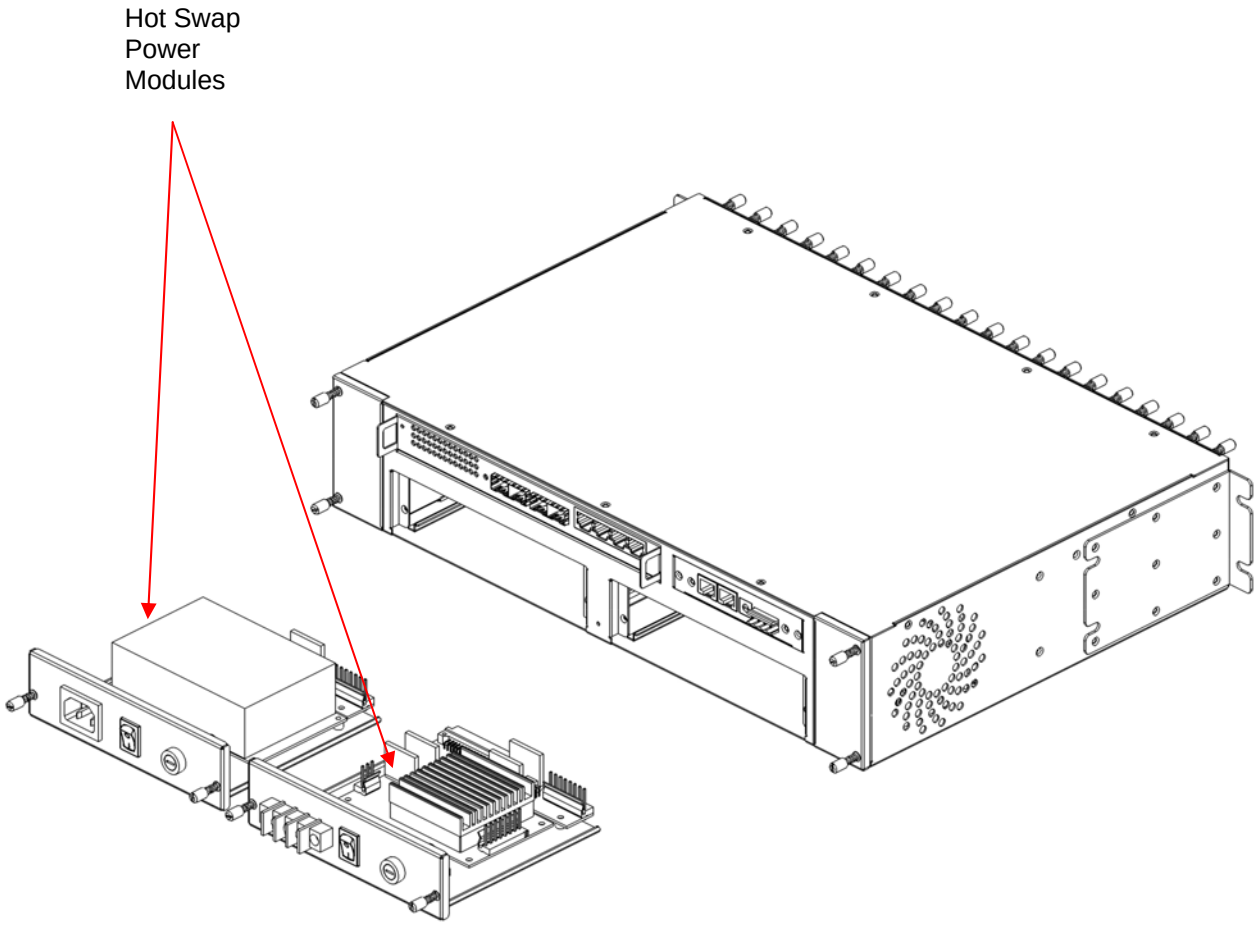


Figure 2-7 Power Modules for ***FRM220A***

2.7 Installation

2.7.1 Line Card Installation

The Line Cards for ***FRM220A*** are Fiber Media Converter Cards which slide into ***FRM220A*** chassis, and interface with the pack panel "main board". The back panel provides a connection to the converter cards for power and serial control. Cards designed specifically for ***FRM220A*** also connect to the L2 Gigabit Switch backplane.

All converter cards are designed to be "hot" swappable, meaning ***FRM220A*** chassis need not be powered off in order to remove or replace a card. Removal and installation of converter cards with the rack chassis under power will not effect the operation of other converter cards.

Removal of a converter card is accomplished by loosening the one (1) captive screw (upper) and then pulling the card straight out of the chassis with the same screw. Replace the card by reversing the procedure, align in the slot groove and gently seat the card, retightening the captive screw.

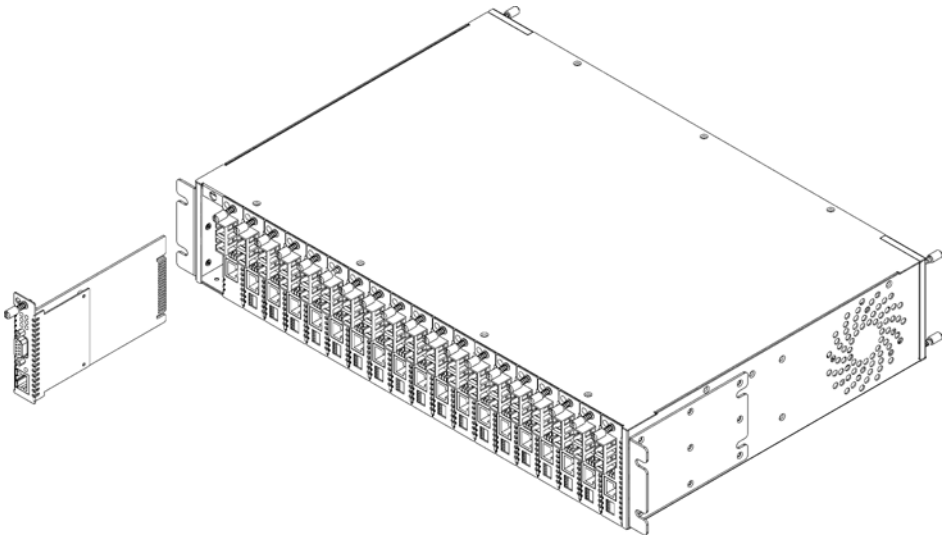


Figure 2-8 Line card removal/replacement

2.7.2 GSW/SNMP Card Installation

The aggregate switch card mounts via a reserved slot in the rear of ***FRM220A*** chassis. The GSW/SNMP card provides the full network management features as well as the aggregate L2 switch functions of ***FRM220A***. When the card is installed, the rack and all line cards become manageable by industry standard SNMP protocol. (Please refer to Chapter 3 for more information on the operation of the switch and SNMP).

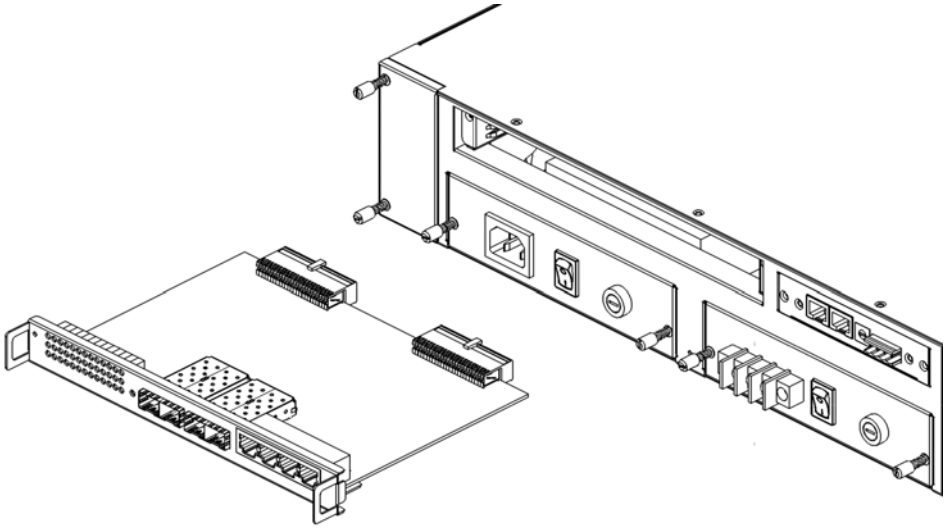


Figure 2-9 GSW/SNMP removal/replacement in slot number 1

IMPORTANT: In FRM220A In-Band Managed Rack, the rear slot must contain the GSW/SNMP card.

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Chapter 3. Management Quick Start

3.1 Introduction

The information here is only a brief introduction to the management interfaces and methodologies for managing ***FRM220A***. For in-depth use of the management features of ***FRM220A***, please refer to the ***FRM220A Aggregate Switch User Manual***.

3.2 Management Methods

The management methods for ***FRM220A*** include IP based textual console (Telnet), web based GUI management through web browser, SNMP management through proprietary MIB and via CTC Union's Element Management System (EMS).

3.3 Web based Management

The GSW/SNMP card has 4 10/100/1000 Ethernet and 4 Gigabit SFP ports for local management or aggregate uplink purposes. The IP management provides a Web based display, with the ability to control all aspects of management in ***FRM220A***.

3.3.1 Default IP settings

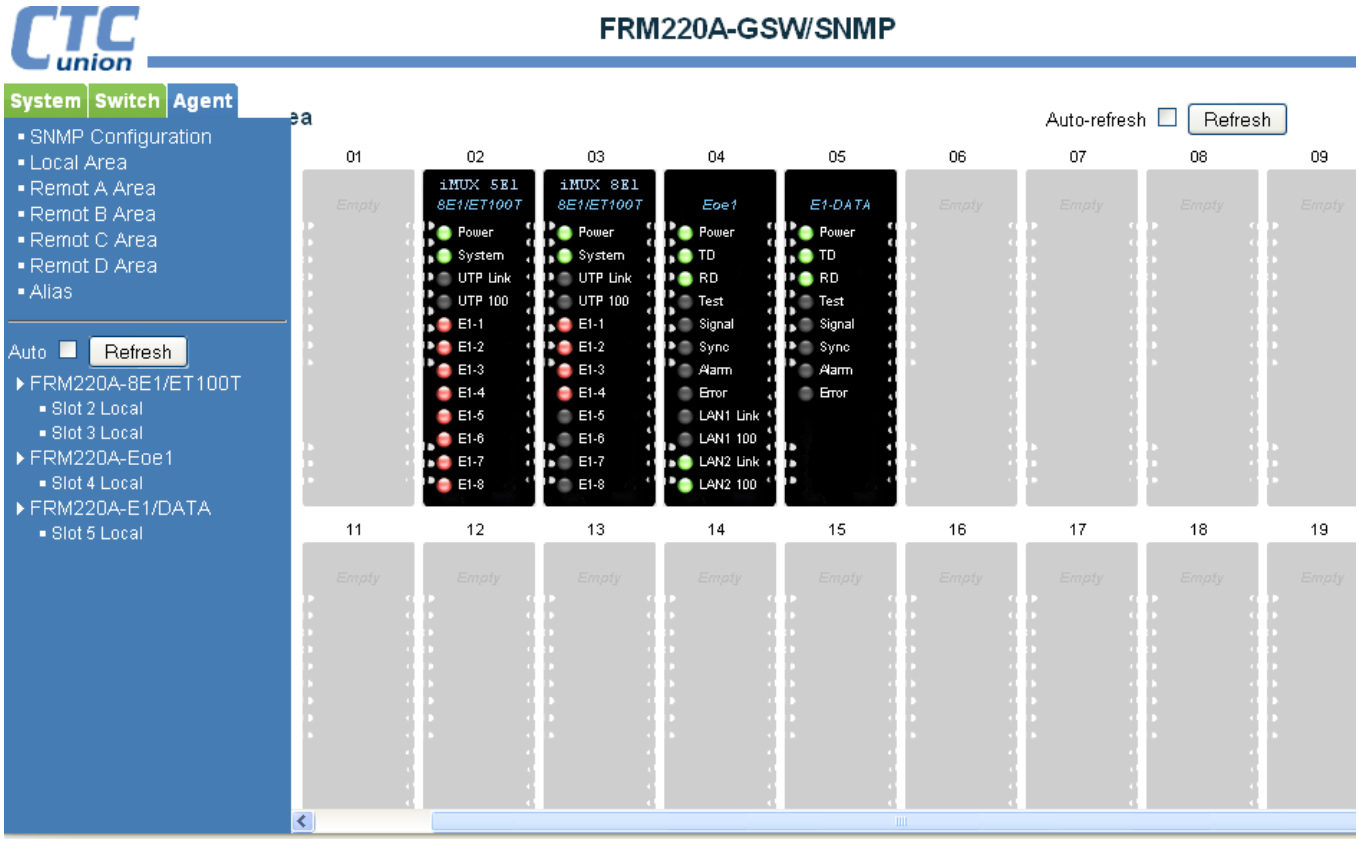
Any one of the Ethernet RJ-45 ports can connect to manager PC by IP.

The default IP settings must follow these communication parameters:
IP address: 192.168.1.1
Subnet mask 255.255.255.0
Default Gateway (don't care)

Username: admin
Password: (none)

3.4 Web Based Manager

FRM220A GSW/SNMP supports web based management. Use your favorite browser (Internet Explorer or Firefox) and connect to ***FRM220A GSW/SNMP*** by using the GSW/SNMP's IP address. Refer to ***FRM220A GSW/SNMP User Manual*** for details.

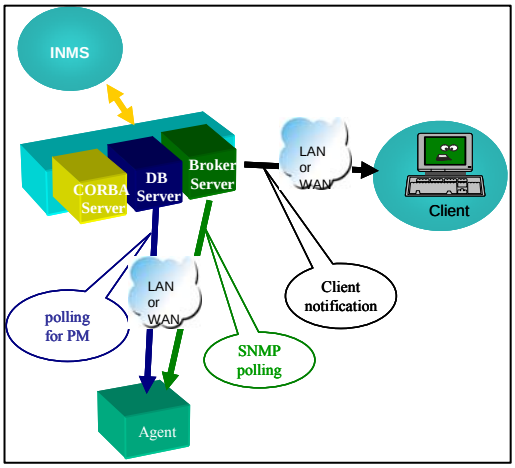


3.5 Element Management System (EMS)

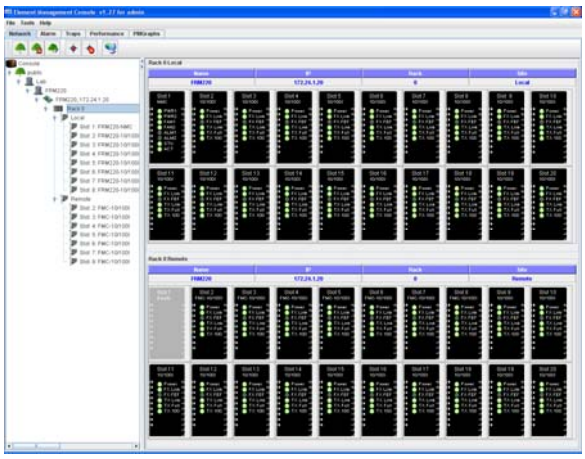
The objective of an Element Management System is to provide four major functions for telecommunication operators:

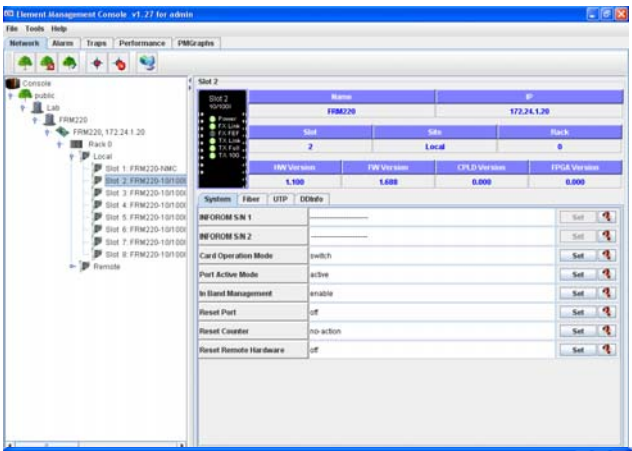
- Fault Management (FM)
- Performance Management (PM)
- Configuration Management (CM)
- Security Management (SM)

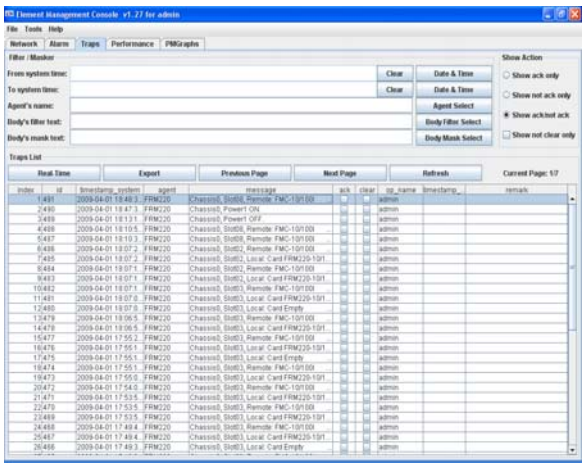
CTC Union's EMS is a proprietary management system designed to provision, monitor and maintain multiple equipments designed by CTC Union. It is a client/server architecture using a Windows® based server with Microsoft MS-SQL Server for a database and Java based server and client. The client software can be run on the server or remotely on another physical machine as long as there is an IP connection between the client and server. Refer to the EMS User Manual for details.

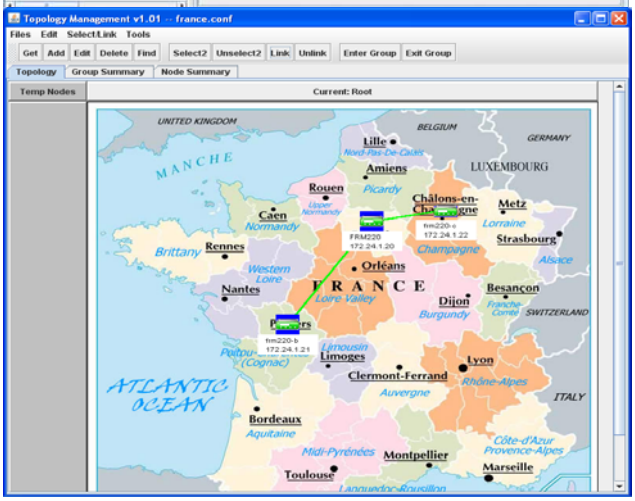


The EMS administrator creates users with different permissions and builds different management trees. Public trees can be seen by all users while private trees can only be seen by their creator. Client interface provides provisioning functions and the viewing and handling of Alarms, Traps and performance data.









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